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THE PSYCHOLOGY OF THE LEARNING PROCESS

PROBABLY no one to-day hopes to invent a machine which will have perpetual motion, and yet many inventors are striving towards an approximation to such a marvel and are constantly reducing friction and making machinery more useful. Likewise, no one can hope to lay down rules which will insure that every child will learn what it is thought he should learn, and yet such an ideal helps us on the way towards formulating such pedagogical principles as will render our system of educational machinery more regular and efficient in its output. And so I am attempting in these few pages to block out in a rough way the psychology of the learning process. With this problem in mind for years in a more or less definite way, I have been introspecting my own mental condition when trying to learn, I have been observing children in the greatest age of 'free learning,' from four to six, and I have also observed adults and experimented somewhat with them in laboratories and class-rooms.

Starting with some notions gained, perhaps, from the Herbartian pedagogy and psychology, it seems to me there are three things, or perhaps four things, which must be taken into account concerning consciousness when learning is taking place in the best way. They are (1) the attitude of the mind, (2) the contents of consciousness, (3) the form of the contents of consciousness, and (4) the structure of consciousness.

Popularly speaking, the proper attitude of mind for learning is that of inquiry, what Professor Baldwin so recently has called 'proposal,' in his article on 'Thought and Language.' When you are engaged in free learning or the pursuit of truth, is it not so that you first set yourself a problem or question? Are you not best satisfied with your pupils when they are asking questions? 'Students are known by the questions they ask,' is an aphorism which my students attribute to me. Of course, I need not remind you that a child from two to six is a wriggling mass of interrogation points. And what is the attitude of inquiry? It is that attitude of the mind when certain ideas are ready to receive new ideas of a related nature, or to form new associations. We generally describe the state by calling it the state of attention, and in particular the state of free learning seems to be that of interested attention or, briefly, interest. A certain train of ideas predominates over other ideas, which requires further associations in order to complete itself. The 'what' or 'why' of a question denotes a gap in a train of thought to be filled, and the person who has the most gaps can naturally take the most in, can learn the most. A very pronounced state of inquiry may be distressing, morbid, dangerous, in some cases, but do we not also designate it as 'divine discontent' in others?

The state of mind in which we are not going to learn much of anything is that of indifference, where our ideas flow along without a break or a ripple on the surface, and if it is not one idea, then it is another which slips into the stream, and no definite end or conclusion is reached because there is no end in view, no gap to be filled.

The content of the mind also determines the success of the learning process. There are certain ideas or groups of ideas which in their very nature or make-up seem to require wider associations. For example, when the child starts to school, the idea complex c-a-t seems to be ended in itself, the child can rest satisfied if he never goes on to 'cats' or the cat-can-run, although he may wish to learn to read. But present the idea complex of the story of a-hen-a-guinea-pig-and-a-cat, etc., or a live-kitten-chasing-its-tail, and what a going-on there is in the mind until the story is heard or the kitten is captured and examined from tip of nose to tip of tail! Tell a man of science it is a fine day, and he takes it calmly. Tell him the causes of the earthquakes along the Pacific coast have been discovered, and his consciousness immediately takes the attitude of inquiry and the thought shapes itself with a blank, 'the causes of the earthquakes are — ?'

So the contents of consciousness must be just those which are provocative of the right attitude of inquiry, of gaps. They are the ideas which have many points of attack or attachments. They must lead to motor activities, especially for the child. If it is true that every idea tends to find motor expression, those ideas which permit of this most naturally are the ones most easily engaged in the acquiring of new ideas, for it is through motor accommodations of muscle and neural adjustment of the sense-organs that we learn again. So the ideas of sense or perceptions are easily the ones which have the greatest learning capacity in childhood, and perhaps later, too, for most of us. We say those contents which have this power of awakening and controlling the other ideas are interesting, and we call them interests. They are constantly changing, and yet very early they mark out the permanent lines along which the mind moves with the greatest freedom and activity.

As to the form of consciousness which is most conducive to learning: Is consciousness composed of clear-cut knowledge, definite ideas arranged in logical form, or is it a mass of 'unformed concepts,' vague fringes of consciousness, half thought, half feeling; *i. e.*, is it objective or subjective? Too often pedagogy has taken it for granted that consciousness is dealing with exactly the same material in the same form while learning that it does later when the subject is learned, and hence it has given rules for the arrangement of definite ideas instead of for forming the clear, definite ideas out of the vague, confused state popularly called feeling, through a transition stage which we call interest, until the ideas stand out clear and well defined and expressible in words. The process of real learning is making the subjective objective; that of teaching is making the objective subjective. Too often the process of teaching has been that of trying to make the objective in the teacher's mind appear at once as objective in the pupil's without the intermediate stage of subjectivity in the mind of the child. That sort of teaching is, as the Irishman said, the kind that 'runs in at one ear and out at the other, like water off a duck's back.'

To be a little Berkeleian, whatever has not gotten itself into our consciousness, absolutely does not exist for *our consciousness.* A piece of cake exists for a child before he lays hold of it and eats it, just as it does for an adult and other children, but a psychical experience of a thing in the individual's own mind is the only possible way in which it can exist, and this existence usually begins, more or less, in what I call a subjective way, *i. e.*, as a fringe of consciousness or a mass of vague ideas, fusing, as it were, with other ideas present; and it is this particular fusion state which is peculiar to each individual, and which he can not communicate to any one else. Gradually the new ideas work their way into the focus of consciousness, take the form of speech or words, and so can be made objective. Truly language is the test of the objectivity of knowledge, and so most teachers spend their whole effort on the testing process and have not given the proper attention to the preliminary conditions. As I look back on myself as a child, it seems to me that my school work was mostly the testing process, but in the long vacation months—there were always from six to seven of these months, fortunately for me—I drank in with the air a love and a consciousness of birds, flowers, sky, water, earth, literature and people, and was only grieved that all *my* questions were not answered. I never felt that I *had* to make all this objective, *i. e.*, tell any one about all this wonderful world, but I wanted to, and to know the names of things, the reasons for things and their relations, and to tell what I had discovered myself. But this was first of all mine, my own that I could not share with anybody, and for that reason so precious, for I must keep it well until I could make it of value to others. To the genius nothing is more noble than the objectifying of his subjective consciousness, making what he has felt objective for all men. The poet, wrestling with the thoughts which have gripped him, will not let them go until he has received the blessing of words which enable him to give them a free gift to all mortals.

And so the learner takes what is objective to his teachers, fuses it with his own peculiar thought in this subjective state, and then puts it in the form of words and gives it back as his own objectification of his own experience. From the vague state it appears in the focus of consciousness with a peculiar subjective fringe of its own. This process, this transition from feeling to thought, we have called interest.

By the structure of consciousness, we mean those organizations of ideas with varying factors, such as memory, imagination, inductive and deductive reasoning. Which structure is most common in the best learning? We must not confuse this with the question, Which is the best structure for arranging and preserving knowledge? Where the aim is to keep the objective in the same language, I think we will agree that memory is necessary, but for what we mean by learning, making subjective truth objective, we must admit that something else is needed, for memorizing is associating ideas already objectified, ideas with which we dare not take liberties, as they have their definite relations of time and space, of cause and effect, of quantity, of position and other like relations. We can hardly be said to remember things until they have truly become objectified; so long as they are mostly fringes they never come back to us the same, and so they have constantly different associations. A feeling in its purest state is most largely made up of organic sensations, very vague fringes, and so is practically unmemorizable.

Now real learning, as we have said, is mostly working with fringes of consciousness, since the process is making the vague subjective clear and objective, and so a structure which admits of free groupings and recognizations is our best form. Perhaps it most often takes the grouping of imagination, *i. e.*, the mind makes freely any sort of connection it will between ideas old and new; that may be the end of it, or it may begin sorting out those ideas and making those connections which are necessary to fill the gap, answer the question, and which finally shall sum up in a broad general statement all the details and be available for future details of a like nature. This is the inductive method, broadly speaking, and when this general statement is used to interpret other ideas, then it becomes deductive reasoning. Perhaps we have so long regarded the deductive as the structure best adapted for learning because it is the communicable stage, the teaching stage and the stage which the teacher is supposed to have reached before he himself can teach.

If we return to our observation of the child, I think we will find that imagination is the prevailing organization, and in the man of genius also, whether poet or scientist, there is just this ability to make new, free associations. The wise teacher, then, will be a person who, instead of doling out objective truths with one hand and with the other receiving back from the pupil the same idea stamped with the pupil's brain trade mark, shall rather be an interesting personality, a psychical and moral object in the pupil's environment from which the pupil can enlarge his own subjective experience. He is not to dictate the conditions of learning, but be on hand to supply the ideas which will be food for the already interesting ideas of the child, or even to help the child find his own interesting ideas. He must serve as the model for the 'trying on,' as Dickens's dolls' dressmaker, Jenny Wren, would say, of half-subjective, half-objective ideas; and he must be on hand to help in the organization from the loose structure of the imagination up through inductive reasoning to the compact form of deductive reasoning. He must help the child in his first-hand manufacture of knowledge, not cram him with second-hand material until his mind is a lumber-room. Or, again, he must not put in a grain of wheat and expect to receive it back immediately, but he must be content that the seed shall sink into the ground, decay and spring up quite a different-looking object from that which he gave forth, provided only that it bears promise of bearing seed in its turn.

Thus we see that the psychology of the learning process is not dealing with ideas and their associations primarily, but with the turning of subjective ideas and sensations, unexpressible in words, into the objective expressible, which can be given forth in the form of logical speech.

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